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ABSTRACT

This teaching manual is the sixth in a series of seven (accompanied by a manual of self-assessment units) that have been designed for use in bilingual/bicultural programs. The components of the series may be used either individually or together. The subject discussed in this manual is a frontier area of cultural democracy that has far-reaching implications: promoting "bicognitive" development, that is, addressing education to children's potentials for cognitive flexibility as well as linguistic and cultural flexibility. Bicognitive development is held to be an asset for all children, but a necessity for culturally different children in the U.S. public school system, especially Mexican-American children. (Author/AM)

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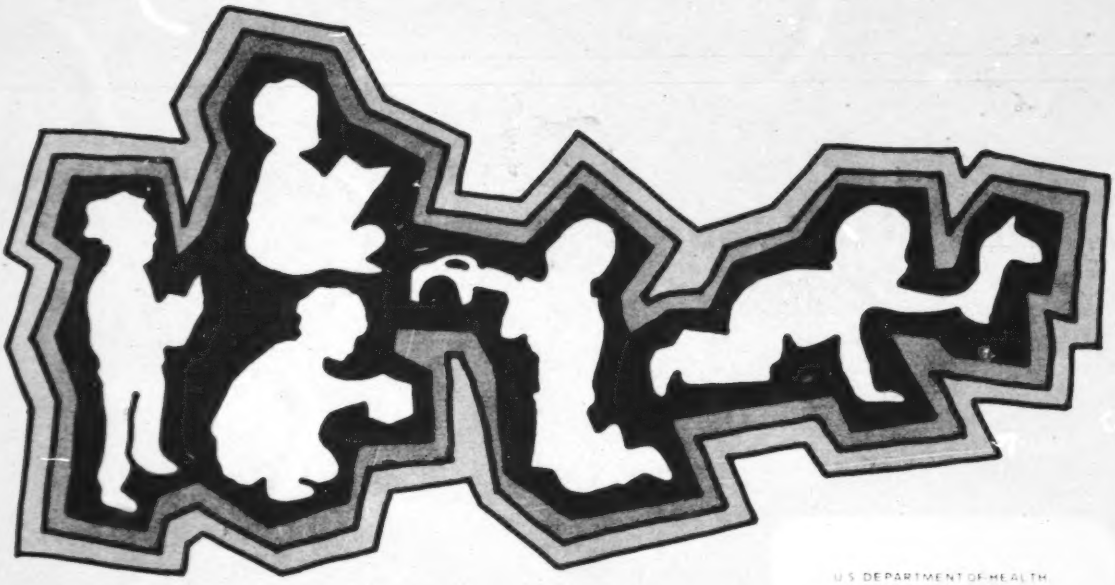
No. 6

# NEW APPROACHES TO BILINGUAL, BICULTURAL EDUCATION



U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

## Developing Cognitive Flexibility

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## DEDICATION

This series of teacher-training materials is dedicated to Dr. George I. Sánchez, pioneer in bilingual, bicultural education.

# Developing Cognitive Flexibility

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## FOREWORD

*New Approaches to Bilingual, Bicultural Education* is a series of teacher-training materials developed under an E.S.E.A. Title VII grant for the use of bilingual, bicultural projects. The materials propose a new philosophy of education called "cultural democracy" which recognizes the individuality of both teachers and students. By using the documents and videotapes, teachers and teacher associates can carefully study their own classroom techniques and the learning styles of their students. They then can use their new knowledge in ways which will best serve the needs of individual children.

The manuals in this series were edited by Pam Harper, staff editor, DCBBE. Covers and title pages were designed by Sarah Frey, assistant editor, DCBBE. Requests for information concerning the documents in this series should be addressed to the Dissemination Center for Bilingual Bicultural Education, 6504 Tracor Lane, Austin, Texas 78721. Accompanying videotapes are available from Videodetics, 2121 S. Manchester, Anaheim, California 92802.

Juan D. Solís, Director
Dissemination Center for Bilingual
Bicultural Education

## PREFACE

This "teaching manual" is the sixth in a series of seven commissioned by the U.S. Office of Education in connection with the Bilingual Education Act (E.S.E.A., Title VII).* The manuals, with accompanying videotapes and self-assessment units, are intended for use in bilingual, bicultural programs. It is envisioned that the materials will provide useful information about the education of culturally diverse children.

The manuals cover a wide range of topics, including educational philosophy, cultural values, learning styles, teaching styles, and curriculum. The three videotapes supplementing each manual review and illustrate subjects presented in the manual. Three self-assessment instruments of a "programmed" nature may be used to conclude the study of each manual. These evaluation instruments are designed both as a review and as a means of emphasizing important concepts.

The manuals, videotapes, and self-assessment units comprise a carefully designed course of study for persons engaged in bilingual, bicultural education. It is our sincere hope that the course of study will prove useful to such persons as they participate in this exciting and promising frontier of education.

*Grant No. OEG-9-72-0154 (280), Project No. 14-0448.

## COMPONENTS OF THE SERIES

## NEW APPROACHES TO BILINGUAL, BICULTURAL EDUCATION

Teacher-Training Manuals — seven individual documents

1. A New Philosophy of Education
2. Mexican American Values and Culturally Democratic Educational Environments
3. Introduction to Cognitive Styles
4. Field Sensitivity and Field Independence in Children
5. Field Sensitive and Field Independent Teaching Strategies
6. Developing Cognitive Flexibility
7. Concepts and Strategies for Teaching the Mexican American Experience

Self-Assessment Units — one document

Includes three self-administered evaluation instruments for each of the seven manuals described above.

Videotapes

Three videotapes are available for each of the seven manuals described above. Each tape corresponds with a self-assessment unit. Further information regarding videotapes is available from the distributor, Videodetics, 2121 S. Manchester, Anaheim, California 92802.

### NOTE

The components of this series may be used either individually or together. Every effort has been made to develop a flexible set of materials so that projects can choose which components are most helpful to them.

# DEVELOPING COGNITIVE FLEXIBILITY

## Introduction

Many American educators are becoming increasingly concerned about exclusionist policies of American public education. Of particular concern is the tendency of public education to attach importance to the language, values, and cultural heritage of only the "mainstream" American culture. Many of the new bilingual, bicultural programs in this country are currently attempting to overcome this injustice. But, will bilingual, bicultural education have fulfilled its ultimate potential simply by bringing "new" languages and cultures to the classroom? We believe not.

Bilingual, bicultural education appears to be a promising vehicle for realizing a more fundamental objective, that of promoting and protecting the diversity represented in American society.(1) Throughout the last five manuals, we have discussed this objective in the language of cultural democracy. In this manual we will explore a frontier area of cultural democracy, one that we believe has far-reaching implications. This frontier area is promoting bicognitive development, or addressing education to children's potentials for cognitive flexibility as well as linguistic and cultural flexibility.

## What Is Cognitive Flexibility?

Tailoring the learning environment to a child's preferred cognitive style is an important first step in culturally democratic education. Another important step is familiarizing the child with the cognitive style with which he is initially unfamiliar. When this familiarization is managed successfully, the child acquires the ability to function comfortably and competently in his preferred cognitive style and in the "non-preferred" or unfamiliar cognitive style. Cognitive flexibility of this nature describes children we call **bicognitive**.

Bicognitive children function well in settings which vary in emphasizing field sensitivity or field independence. For example, bicognitive children are comfortable in both cooperative and competitive settings. They understand and master both impersonal and social abstractions. Depending on the requirements of a problem, they make use of either inductive or deductive reasoning. They are successful in classes in which teaching is primarily field independent as well as in classes which stress field sensitive teaching. In addition, bicognitive children have an advantage in many situations by being able to use the field sensitive and field independent cognitive styles simultaneously.

Outside school, bicognitive children are more able to participate effectively in cultures which differ markedly from one another in human relational styles, communication styles, and thinking styles. In other words, bicognitive children are adaptable. They are resourceful and capable of profiting from a wide variety of educational and social settings.

## Importance of Cognitive Flexibility for Bicultural Children

Bicognitive development is an asset for **all** children, but it is a crucial necessity for children whose values and identities differ from those of the mainstream American middle class. This point is especially obvious in the case of Mexican American children. As we explained in Manuals 2 and 3, Mexican American socialization practices tend to favor the development of field sensitivity in children. Yet public schools tend to be centered around field independence.

(1)For a thorough discussion of this point, see M. Ramírez and A. Castañeda, *Cultural Democracy, Bicognitive Development, and Education* (New York: Seminar Press, forthcoming).

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The teaching styles, curriculum, and classroom arrangement found in most schools are not consonant with the field sensitive Mexican American children's communication styles, human relational styles, incentive-motivational styles, and learning styles. The conflicts which follow from these differences are evident in children's ambivalent feelings about school and their fears of failing to meet the school's standards of success. Unable to understand the subtle sources of these conflicts, field sensitive Mexican American children often sense that they must choose between the world of the school and the world of their home and community. This is a difficult and painful choice. The child risks eventual alienation from his home and community if he abandons its values and culturally unique life style (including cognitive style). Not to undergo this transformation is to risk failure at school.

Culturally democratic educational environments enable the child to succeed in school **and** continue to develop his preferred cognitive style. A field sensitive Mexican American child, for example, might at first be exposed only to field sensitive teaching and field sensitive instructional materials. After reinforcing the child's strengths in the preferred cognitive style, the teacher could introduce him to field independent teaching. The child's introduction to an unfamiliar cognitive style should, of course, be gradual. The teacher might consider introducing competition in the context of group cooperation, children working cooperatively with one another in groups to win a prize.

When education emphasizes bicognitive development, children are spared the confusion and pain of having to choose between potentially conflicting social and educational orientations. In becoming bicognitive, the child acquires the capacity to participate in, and contribute to, the world represented by the school and that represented by his home and community.

It is our feeling that this objective cannot be met simply by diversifying the languages and cultural heritages represented in the classroom. Children are, of course, entitled to linguistic and cultural diversity at school; but if they are to operate comfortably and successfully in both the mainstream culture and their own ethnic communities, they must also achieve cognitive flexibility.

## Developing Cognitive Flexibility

The authors have found in their research that cognitive flexibility can be achieved by moving the child from groups geared initially to his preferred cognitive style to groups which incorporate more and more of the child's unfamiliar (nonpreferred) cognitive style. We suggest following these steps as a means of implementing such a plan.

### 1. Assessing Cognitive Style in Children and Teachers

The rating forms described in Manuals 4 and 5 should be completed in the school year. Since two or three weeks (or more) are required for a teacher to become familiar with children's cognitive styles, we suggest that teachers and teacher associates concentrate at first on assessing their **own** cognitive styles, especially their dominant teaching styles. With this accomplished, attention can be turned to determining whether specific children are field sensitive, field independent, or bicognitive.

**2. Creating Instructional Groups**

Once the necessary information about teaching styles and children's cognitive styles has been collected, the teacher and teacher associate can begin to assign children (and each other) to groups which differ in emphasizing either field sensitivity or field independence. These decisions should be made carefully, with as much discussion between teacher and teacher associate as possible. It is especially useful if group assignments are based on a thorough review of the Child Rating Forms (see Manual No. 4). If a completed rating form indicates that a child's preferred cognitive style is not clearly field sensitive or field independent, the child should be placed in a "middle" group. The middle group (discussed at greater length later in this manual( provides a situation in which the child can adjust gradually to his unfamiliar cognitive style.

After reaching decisions concerning assignment of children to groups, the teacher and teacher associate should decide who is best suited to teach each group. Comparing each other's completed teaching rating forms is very important at this stage.

**3. Selecting Curriculum and Teaching Strategies**

The teacher assigned to each group should carefully review Manual No. 5 before deciding what kinds of teaching and curriculum will be emphasized in a particular group. When available materials (such as those provided by the school) are inappropriate for the group in question, the teacher should revise materials as needed. With field sensitive children, for example, the teacher should humanize the commercial curriculum, add elements of fantasy, or modify the curriculum by incorporating its main points into a story (see Manuals 4 and 5 for recommendations). If the commercial curriculum does not lend itself easily to the necessary revisions, we suggest experimenting with self-created materials.

The teaching strategies to be used with each group should follow the recommendations in Manual No. 5. The teacher should remember, for example, that a field independent group of children usually works well with minimum guidance. Working alone in small interest centers often facilitates learning among these children. The teacher might decide to select those field independent teaching strategies which are well suited to learning centers.

Lesson plans are very important to a teacher preparing to match teaching and curriculum to children's cognitive styles. Special care should be taken to state in writing the particular objectives from Manual No. 5 that the teacher intends to meet (such as strengthening the personal relationship with students).

**4. Introducing the Unfamiliar Cognitive Style**

Shortly after the teacher and teacher associate have begun to work with their assigned groups, they should begin thinking about introducing the children to unfamiliar teaching styles and curriculum. The timing of this move is critical and should be based on careful evaluations of each student. In making these evaluations, the teacher and teacher associate should pay particular attention to the way in which a child functions in the preferred cognitive style. Is the child performing well academically in his preferred cognitive style? Does the child seem comfortable and well adjusted in a group which emphasizes the personal and curriculum-related behaviors of his preferred cognitive style? When these questions are answered in the affirmative, the child is ready to be introduced to a group in which teaching and curriculum are based on the child's unfamiliar cognitive style.

The children in one instructional group may develop at different rates in their preferred cognitive style. In this case the teacher would transfer children to the middle group at different times. The teacher might, however, decide to move all the children in one group at once if they appear equally comfortable and successful with their preferred cognitive style. It is possible, then, that the composition of the different groups would not change. It is also possible that some children would move to the middle group earlier than others. The middle group allows each child an opportunity to adjust gradually to the unfamiliar cognitive style. We emphasize **gradual adjustment** in as much as the unfamiliar cognitive style often presents challenges which require some time and effort for the child to meet effectively. A field independent child, for example, might be uncomfortable at first when moved to a field sensitive group. Cooperative endeavors are sometimes misunderstood, and sharing answers is sometimes seen as a form of cheating. (Misgivings can, of course, be turned to enthusiasm if the teacher takes care to present cooperation in a way that invites the interest of field independent children: "You are very good at addition and subtraction — I'm going to have you work together with Maria and Paul and see if your team can finish first.") Field sensitive children, on the other hand, at first find competition and self-directed projects unfamiliar and threatening. Their initial discomfort can be reduced by placing them in mildly competitive situations in which they receive personalized assurances from the teacher (such as encouragement in Spanish). As the children become increasingly familiar with competition and field independent teaching in general, they will need fewer and fewer reassurances from the teacher. This should not be interpreted to mean that field sensitive children adopt field independence as their preferred cognitive style. As explained by a teacher in the videotapes accompanying this manual, field sensitive children generally retain their preference for functioning in a field sensitive manner while becoming more able to function well in field independent situations.

The purpose of introducing the child to the unfamiliar cognitive style is not, then, one of replacing the preferred cognitive style. To become truly bicognitive, a child must develop simultaneously in both the field sensitive and field independent cognitive styles. This objective is endangered if introduction to the unfamiliar cognitive style is too abrupt, for the child may simply retreat and become unwilling to explore elements of the new style. Or, if the child is pressured, he may feel that he is expected to abandon his preferred cognitive style in favor of the new one.

The middle group helps avoid these dangers by allowing the child to use his preferred cognitive style as a basis for exploring the unfamiliar style. Competition is introduced in the context of cooperation, or vice versa. Other aspects of the unfamiliar style can also be presented in terms of the preferred cognitive style. Someone teaching the middle group might, for example, introduce modeling and deductive reasoning along lines of the discovery approach: "Yesterday I showed you how I find out if two triangles are equal. I have also showed you how I find out if two squares are equal. Now you know the shortcuts I use in finding the area of something. I have some rectangles for you to look at, and I want you to find out if they're the same, but I want you to do it the way you think I would, using the shortcuts I used with triangles and circles."

After becoming basically familiar with the mixture of cognitive styles in the middle group, the child is ready to be transferred to a group in which teaching and curriculum are based almost exclusively on the unfamiliar cognitive style. Again, the timing of such a transfer is important. In the following section we will consider the procedures for deciding when a child is ready for this second move.

**5. Evaluating Progress in the Preferred and Unfamiliar Cognitive Styles**

It is important to evaluate each child continuously with the Child Rating Forms in Manual No. 4. When the teacher and teacher associate are satisified that a child is functioning comfortably and achieving well academically in his preferred cognitive style, the child is moved to a middle group. The child has been evaluated with the Child Rating Form corresponding to his unfamiliar cognitive style. Examining this evaluation is useful for identifying behaviors from the unfamiliar style which the child is regularly exhibiting and those which need further development. The person teaching the middle group should look also for important similarities and differences in the Rating Forms of all children in the middle group. The similarities will suggest the appropriate "pace" of introducing unfamiliar teaching styles and curriculum.

At some point the middle group teacher will begin to recognize patterns in the Rating Forms of different children in the group. Some children will begin displaying behaviors of the unfamiliar cognitive styles with greater and greater frequency, while other children will continue to operate primarily on the basis of their preferred cognitive styles. Differences of this nature are important, for the decision to move a child from the middle group should be based on careful study of the child's progress in the unfamiliar cognitive style. When a child appears to be making satisfactory progress, arrangements should be made for a transfer. There is, of course, no magic formula for knowing the ideal moment to transfer any particular child. The decision to move the child from the middle group is never considered irreversible. The child can be returned to the middle group if he experiences difficulty in the new group.

Once in the new group, the child should be evaluated regularly with the Rating Form in his unfamiliar cognitive style. The child who "often" or "almost always" displays the observable behaviors of this new cognitive style is making important progress toward becoming bicognitive. This is especially true for the child who has continued to develop as well in his initially preferred cognitive style. To know the extent to which children are achieving cognitive flexibility, then, the teacher must evaluate progress in both field sensitivity and field independence. These evaluations will not mean a great deal, however, unless children are provided with ample opportunity to develop in both cognitive styles. It is important that the teacher continue to provide the child with opportunities to develop in his preferred cognitive style after having become comfortable with his unfamiliar cognitive style. The following section considers specific recommendations for achieving this objective.

**6. Flexibility in Teaching**

The plan we have outlined for matching students and teachers on the basis of cognitive style is an important first step in promoting bicognitive development. Another important step is flexibility in teaching. By this we mean that every teacher should acquire the ability to use both the field sensitive and field independent teaching strategies effectively. It is not enough,

in other words, that a teacher master one of the strategies and leave the other to an associate who, in turn, is an expert in only one cognitive style. If this specialization were allowed to occur, children would not be provided with models of cognitive flexibility. Nor would they have opportunities to switch strategies in the middle of problem solving or to combine elements of both cognitive styles at one time.

The instructional groups we have described in previous sections therefore serve only a temporary purpose. Eventually the teacher will be able to use field sensitive and field independent teaching strategies with any group (suggesting that children can be grouped in many different ways). The group with which the teacher is working may consist of children who are operating on the basis of different cognitive styles. An example is provided in the first classroom scene shown in the videotape entitled "Field Sensitive and Field Independent Teaching Strategies." In that scene the teacher had assigned two children to work individually on a field independent math lesson. After emphasizing the importance of "exact measurement," the teacher made it clear that the children (who have a history of competing with one another) were to work as quickly as possible. After the children began working, the teacher turned her attention to the field sensitive teaching strategy. Other children in the group worked together in pairs on a measurement task taken from a field sensitive lesson.

At another time, this teacher could have used the field sensitive teaching strategy with field independent students (or the field independent strategy with field sensitive students). She also would have been able to teach an entire group of children in either of the two strategies. As this example suggests, flexibility in teaching provides teachers with effective means for enabling children to develop competencies in both cognitive styles. Teaching strategies for a particular subject matter can be selected on the basis of individual children's rating forms. If, for example, a child is having difficulty in solving math problems which require inductive reasoning, the teacher can provide the child with curriculum materials and instruction designed to strengthen inductive skills. The teacher can later provide the same child with opportunities to further develop his skills at deductive reasoning. When evaluations indicate that the child is achieving cognitive flexibility, the teacher can introduce the child to problems which require both inductive and deductive problem-solving strategies.

In spite of having achieved this degree of flexibility, the teacher probably retains preferences for one of the two teaching strategies. The two teachers interviewed in the videotape corresponding to this manual both reported some initial difficulty in using the unfamiliar or nondominant teaching strategies. As do many teachers, they continue to find it easier or more natural to teach in their preferred cognitive styles. Nonetheless, they have been able to develop competencies in both the field sensitive and field independent teaching strategies. How were they able to achieve flexibility in teaching?

The answer lies in rehearsal and planning. During inservice training institutes, these and other teachers in an experimental program became familiarized with their nondominant teaching strategies (and at the same time acquired a fuller understanding of their preferred teaching strategies). Since these workshops proved to be so effective with these teachers, we would like to describe the features of inservice training that can help teachers develop flexibility in teaching.

One extremely important purpose of inservice training is to familiarize teachers with their nondominant teaching strategies. This can be accomplished in two ways. Perhaps the simplest procedure is for the workshop participants to describe to one another the teaching techniques and instructional materials they have found to work particularly well with field sensitive, field independent, or bicognitive children. At a later point in the workshop, the teachers and teacher associates can present lessons to demonstrate their preferred teaching strategies. This allows other participants an opportunity to carefully observe each other's teaching.

After becoming familiarized with the field sensitive and field independent teaching strategies, the workshop participants can study Manual No. 5 and plan a sample lesson in their nondominant teaching styles. It is important for the teacher or teacher associate to identify clearly the objectives he wishes to achieve. With these objectives established, the teachers can rehearse a lesson to present during an upcoming workshop. The subsequent presentations should be carefully evaluated and critiqued. Some of the most valuable suggestions will probably come from teachers and teacher associates who are already familiar with the teaching strategy being demonstrated. Workshop participants can also rate the teacher's behavior with the rating form corresponding to the teacher's intended strategy (or, in the case of teaching bicognitive children, use both forms). Videotaping the lessons is also valuable, since the teacher will recognize strengths and weaknesses first hand rather than having to rely on other person's interpretations.

Workshops of this nature are extremely useful for helping teachers to develop flexibility in teaching. Once this objective has been met, teachers are well prepared to begin implementing culturally democratic educational environments.

In concluding, we stress the importance of culturally democratic educational environments for promoting cognitive flexibility in children. Too often in the past American public education has favored development in only the field independent cognitive style. The one-sided concern of American public education has been especially unfair to children whose preferred cognitive style is field sensitive. They have been denied full opportunity to succeed in school and, at the same time, to preserve ties with the communication styles, human relational styles, and thinking styles of their home and communities. At the same time, field independent children have not been encouraged to diversify their own perspectives and skills.

Cognitive flexibility, as a goal of bilingual, bicultural education, has many advantages. One of these is enabling each child to retain and develop the cognitive style which was fostered in his unique home and community socialization experiences. Another advantage is equipping children to function effectively in diverse intellectual and social environments. A third advantage is familiarizing children (and adults) with their unfamiliar cognitives styles as a means of promoting understanding of alternative values and life styles.

**DISSEMINATION CENTER FOR BILINGUAL BICULTURAL EDUCATION**

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